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"Towards securing human welfare through management of insect diversity in a changing world"
"Vers une amélioration du bien-être humain grâce à la gestion de la diversité des insectes dans un monde en mutation"
"نحو تأمين الرفاهية البشرية من خلال إدارة تنوع الحشرات في عالم متغير"

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Book of Abstracts
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"TOWARDS SECURING HUMAN WELFARE THROUGH MANAGEMENT OF INSECT DIVERSITY IN A CHANGING WORLD"

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encoches de ponte, les déjections et les vermoulures, les orifices d'émergence, les dégâts de nutrition causée par les adultes immatures, à savoir les branches sectionnées. Les signes internes caractéristiques sont les galeries d'alimentation des larves et les chambres nymphales dans les branches. Les symptômes sont les cicatrisations après les attaques. Cette étude révèle que la présence des insectes peut être détectée avant les périodes d'attaques et constitue la base d'une lutte préventive efficace contre *A. trifasciata*.

Mots-clés : *Analeptes trifasciata*, anacardier, signes, symptômes, Brobo.

ST-3.14. Insect Net on High Tunnel as an Effective Technology to Protect Tomato Crops against Major Pests in the Highlands of Kenya

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Abstract

Tomato crop is a agricultural precious commodity worldwide due to high economic returns, nutritive value and role in agricultural and economic diversification. Therefore, tomato demand is booming in sub-Saharan Africa to feed the growing urban populations. But high pest pressure throughout the year, insecticide resistance and the arrival of new species such as tomato leaf miner *Tuta absoluta* are major constraints in management. Consequently, in sub-Saharan Africa, tomato yield, quality and environmental health practices remain way below international standards. To increase marketable production and quality sustainable pest control is essential. Several alternatives including biopesticide, semiochemical and insect nets are being explored. This study was carried out to evaluate the effectiveness of a high tunnel covered by insect net combined with biopesticides to protect tomato crop against major pests. A statistic block design was implemented in the research centre of KALRO Mwea in Central Kenya during two seasons. Biopesticides based on *Bacillus thuringiensis* and *Metarizium anisopliae* were used to complete the physical protection against caterpillars and sucking pests respectively. The results showed that correctly used, insect nets used on high tunnel protect tomatoes against *T. absoluta*. Whiteflies (*Trialeurodes vaporariorum*), serpentine leaf miner (*Liriomyza spp*.) and brown thrips (*Frankliniella* spp) populations remained at a significantly lower level or arrived later inside the tunnel as compared to open cultivation, but the dark thrips species were much more inside at the flowering stage. Net treatment with permethrin did not provide a significant reduction in pests population as compared to non treated net. Biopesticides recorded significantly low pest populations as compared to the untreated control in open field. The yield was significantly improved mainly due to greenhouse effect. Demonstrations in farmer fields confirmed the effectiveness and affordability of this technology. With higher ventilation, reduction of dryness and a capacity to use rain, high tunnel high tunnel covered by net appeared effective against pests, adaptable and affordable to smallholder farmers to produce good quality tomatoes in the highlands of Kenya.

Key words: Insect net, High tunnel, *Tuta absoluta,* Biopesticides

ST-3.15. Bioecology of a Major Pest of Arabica Coffee in Eastern Africa Highlands, the African Coffee White Stem Borer, *Monochamus leuconotus* (Coleoptera: Cerambycidae)

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Abstract

For the last 50 years, coffee production has been in constant decline for major producing countries of Eastern Africa, like Kenya and Tanzania. Factors explaining this decline include high production costs, especially costs for fertilizers and pesticides, which led many smallholders to phase out of coffee farming. The African coffee white stem borer (CWSB), *Monochamus leuconotus* (Pascoe) (Coleoptera: Cerambycidae) appears to be a growing threat in those countries and a significant cause of coffee farming abandonment. CWSB damages coffee trees, mainly by ring barking and wood boring, leading to low yields and dieback under high infestation. Insecticides that have proven to be effective for CWSB control in the past are banned today, and coffee smallholders are poorly equipped to resolve the threat. An urgent need for action has been recognized in different countries of the region to provide scientifically-sound and practical strategies for the management of CWSB. However, available knowledge of the pest bioecology still suffers gaps that need to be filled to achieve this objective. For 4 years now, the coffee pest project at International Centre of Insect Physiology and Ecology (icipe) in Kenya has undertaken research dedicated to CWSB bioecology. The present communication reviews this research and gives some basic unpublished life history traits. A rearing method with an artificial diet has been developed that allowed the description of CWSB life cycle and feeding and reproductive behaviours, and the assessment of the pest demographic parameters. Field surveys in smallholder coffee farms located on elevation gradients on Kilimanjaro, Tanzania allowed the characterization of the pest population dynamics and showed impact of agro-ecological factors such as elevation, shade and microclimate. Recommendations for a more efficient and sustainable management of this major pest are proposed based on existing knowledge along with results obtained at icipe.

Key words: rearing method, life cycle, demographic parameters, population dynamics, agro-ecological factors, IPM.

ST-3.16. Aspects of the Biology and Food Consumption of the African Bollworm *Helicoverpa armigera* (Hub) on Sunflower at Gedarif, Sudan

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Abstract

The African bollworm *Helicoverpa armigera* (Hub) (Lepidoptera: Noctuidae) has become important insect pest on sunflower in the Sudan. An experiment was conducted under laboratory conditions at Gedarif, Sudan to study the biology of the pest and to determine the amount of food consumed by 3rd to 6th larval instars on the three sunflower varieties, i.e.(Damazin-1) open pollinated and two hybrids (Hysun 33 and Pannar 7355). The results showed that females of *H. armigera* laid their eggs singly. The maximum number of eggs laid per a single female was on Damazin-1 (79-893) and the minimum eggs laid was recorded on Hysun33 (70-531) followed by Pannar 7355 (78-467). Six larval instars were developed on the three sunflower varieties during 11-15, 11-14 and 10-12 days on Damazin-1, Hysun 33 and Pannar 7355, respectively. The life cycle was longer with Damazin-1(24-45 days) than that with two hybrids Pannar 7355 (22-40 days) and Hysun 33 (28-34 days). The total amount of food consumed was greater on Damazin-1 (210.7 mg) compared to Pannar 7355 (149.8mg) and Hysun 33 (118.3mg). Following these results, field studies will reveal information useful tor the integrated management of the African bollworm in Sudan.

Keywords: African bollworm, Sunflower, Hysun 33, Panar 7355, Damazin-1, Biology, food consumption

ST-3.17. Nutritional Indices of Chickpea Pod Borer, *Helicoverpa armigera*, on Varieties of Chickpeas, Fababeans and Tomato in Ethiopia

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